



Figure 1: ISA2cd Nucleotide Sequence

caagatggat	aacctccgtg	aatgcataaa	ccgcaaaaga	agactacttg	ccttaccaga	60
tggttcctgaa	acttcgggatg	ccttttctaag	tgatttgaga	catctataca	tgtgtgttgc	120
tttctgtgat	caacacaaaa	ccactggaga	cgaatcaaga	ttcaccaacc	tggaattact	180
tgaccaagat	gaagcactag	gtgcccaaag	agcttttgaa	gccaaacatg	gaataaaagg	240
aggttcttta	ggagacgttc	tgaccatga	actgaaaaag	gtcattgaat	ttacttttac	300
ttctggaagt	ttgtatatgg	ccgaacaaag	aaaaagaaag	actcaagcag	actcaataat	360
tgtgtgcgtt	tcagaaggac	ttaacgactt	cagcgtatca	cacggagtgc	tagacatggg	420
acttgtggaa	acaggggtga	atgcagtaag	agatttctgc	acacaaaacg	gaataccaat	480
gaagataaat	caggtaggat	ccacgagaac	accaacaccg	atcagcacat	gcaaaatctc	540
tgaacaaata	acacgacaga	taaacagtac	aattactgaa	aggaaaatgg	aaacagtact	600
ggcagcaatc	gcaattaaac	cagaactcaa	actaactcag	aaaggatgca	gaccttgtaa	660
agaactagaa	gatgaaaata	ttctgtggat	ggaccctcaa	ttctgtgaaa	ttgatgaaag	720
ttttccttac	agaggagggc	catacgggaa	cttcctgcaa	gaattgctgc	ttacaaccaa	780
cgacgtagag	accaacggga	aagacagaga	agaagtagta	aagaagatac	tggtatacaa	840
ggcgttcacc	gttgaagtg	gtgaatgcat	aataacactt	ccagacaaaa	tgacttgttt	900
cggagaacag	gagaagaaga	gaccagcaac	aatagacgaa	gtgagaaccg	caggagaaag	960
gtttgaacag	agtgttaaac	cgaaaaccca	aagatatgga	aggttatcag	acaaatggat	1020
ggagcttgaa	aagtttatct	ttactgcaag	caaaacagaa	gtggatactt	tcctttctgt	1080
agggaccgaa	agacttgagt	cggttggagt	gtgtgtcgga	gctttacaca	gagcgaccac	1140
aaccaggata	attagaccta	tgattcaagg	agggaaatgt	tgggggatga	tggtcaaaac	1200
aaagtccaaa	atgggagaca	cgaggaagga	aggatactgt	cacgcaatca	ttttcggaag	1260
aggggaagat	aaatcaggac	aaaacaagat	gacaatgatg	gggaaaacag	tacattggca	1320
tctaagagta	gttaagtcta	aaggagactg	gatggcgcaa	caactctgtg	caaacaaaag	1380
cagaatatgg	gaacatgacc	ctgagctagt	aacagaagga	gtgacagttc	taatgacgcc	1440
ttttctctcag	aaaattgcca	ccattagtag	atggagggca	atgaggttag	acagcatggt	1500
tcatgtttct	agtgcctggc	atcattcacc	tgcgtgtgaa	gctgcatcgg	caatgctgag	1560
aaagtgtgtg	gagatagtac	atgccatcaa	ccagaaaaga	gattgggggtg	ttgtggggag	1620
tatggaggac	atggtgaagg	aagtggagga	aataggggag	cacttgacga	cggcatgtga	1680
ttttagagtt	tacaacatgt	gcaaagcctt	gattcagaaa	attgcagtca	gtaccaaatg	1740
agtggttatt	tacttgtaaa	ttgtgtgtgtg	tttgacgata	tgtatttgtc	gacgcggccg	1800
cggtcgacgc	ggccgcgaat	t				1821

Figure 2: ISA2cd Amino Acid Sequence

1	11	21	31	41	51		
1	MDNLRECINR	KRRLALPDV	PETSDAFLSD	LRHLYMCVAF	CDQHKTGDE	SRFTNLELLD	60
61	QDEALGAQRA	FEAKHGIKGG	SLGDVLDHEL	KKVIEFTFTS	GSLYIAEQRK	RKTQADSIIV	120
121	CVSEGLNDFS	VSHGVLDMGL	VETGVNAVRD	PCTQNGIPMK	INQVGSTRTP	TPISTCKISE	180
181	QITRQINSTI	TERKMETVLA	AIAIKPELKL	TQKGCRPCKE	LEDENILWMD	PQFCEIDESH	240
241	PYRGGPYGNF	LQELLLTTND	VETNGKDREE	VVKKILDNKA	FTVESGECII	TLPDKMTCFG	300
301	EQEKKRPATI	DEVRTAGERF	EQSVKPKTQR	YGRSDKWME	LEKFIFTASK	TEVDTFLSVG	360
361	TERLESVGVC	VGALHRATTT	RIIRPMIQGG	KCWGMMFKTK	SKMGDTRKEG	YCHAIIFGKG	420
421	EDKSGQNKMT	MMGKTVHWHL	RVVKSFGDWM	AQQLCANKSR	IWEHDPELVT	EGVTVLMTFF	480
481	SQKIATISRW	RAMRLDSMFH	VSSAWHHSPA	CEAASAMLRK	FVEIVHAINQ	KRDWGVVGSM	540
541	EDMVKEVEEI	GEHLQTACDF	RVYNMCKALI	QKIAVSTQ			

Molecular weight: 65336.10

Theoretical pI: 6.94

Figure 3: ISA1mta Nucleotide Sequence

gcaaagatyg	ctcaaatccc	aaaaataata	cagaaaacgt	ataagagatg	gccgataaag	60
gtatgactta	ttcttttgat	gtcagagaca	acaccttggt	tgtaagaaga	tctaccgcta	120
ctaaaagtgg	cattaagatc	tcctacagag	aggatcgagg	aacatcactt	ctccaaaagg	180
cattcgccgg	gacagaagat	gaattctggg	tggagttaga	tcaagatgtc	tacgttgaca	240
aaaagattag	aaaattcctg	gaagaagaga	aaatgaagga	catgagcaca	agagtgtctg	300
gagcagtggc	agcagcaatt	gaaagatcag	ttgaatttga	caatttctca	aaagaagcag	360
cagctaacat	tgaaatggct	gggtgtagatg	atgaagaagc	tggaggaagt	ggctctggtag	420
acaacagaag	gaagaacaaa	gggggtctcaa	acatggccta	caatctgtct	ctattcatag	480
ggatgggtgtt	tcctgtcttc	actactttct	tcagtgtctat	cctatcagaa	ggtgaaatga	540
gcatctggca	aaatggacaa	gcaatcatca	gaattctggc	actggcagat	gaagacggaa	600
agagacaaac	aagaacagga	ggacagaggg	tggacatggc	tgatgtaacc	aagctgaacg	660
tagtcacggc	taacgggaaa	gtcaagcaag	ttgaagtaaa	cttgaacgat	ctcaaagcag	720
cattcaggca	gagtagacct	aaaagatcgg	actacagaaa	agggcaaggt	tccaaggcta	780
cagaatcaag	catctccaac	caatgtatgg	cactgattat	gaaatctgtg	ctgtcagcag	840
accaactttt	tgctccggga	gtgaagatga	tgaggacgaa	cggtttcaat	gcgtcgtaca	900
caacactggc	agaaggggca	aacattccga	gcaagtacct	aagacacatg	aggaactgcg	960
gaggagtagc	tctggacctg	atgggaaatga	agaggatcaa	aaactcacct	gaaggagcca	1020
agtctaagat	cttttccatc	atccagaaga	aagtaagagg	aagatgtcgc	acagaggagc	1080
aacgcctcct	gactagcgca	ctgaaaatca	gcgacgggtga	aaacaagttc	cagagaatca	1140
tggacactct	atgtacaagc	ttcctgattg	accctccaag	aactaccaa	tgcttcattc	1200
cacctatttc	cagtctcatg	atgtacatcc	aagaaggcaa	ctctgtactg	gcaatggatt	1260
tcataaaaa	cggagaggac	gcctgcaaga	tctgcagaga	agccaaactg	aaagtggggg	1320
taaacagtac	gttcacaatg	tcagtagcta	gaacatgcgt	tgcatgttca	atggttgcaa	1380
cagctttttg	ttctgcagat	atcatcgaga	atgcagtgcc	tggttccgaa	aggtacagat	1440
ccaacatcaa	ggctaacaca	accaaaccac	aaaaggactc	cacttacaca	attcaaggac	1500
ttagattgtc	taacgtgagg	tatgaagcaa	gacctgaaac	atcacaaagc	aacacagaca	1560
gaagttggca	agtgaacgtg	actgacagct	tcggaggact	tgctgtgttc	aaccaagggg	1620
caattagaga	aatgctagga	gacggaacat	cagagacaac	tagtgtgaac	gtcagagccc	1680
tggtgaagag	aattctgaaa	tcagcttcag	agaggagtgc	aagagctgta	aagacattta	1740
tggtgggaga	acaagggaaa	tcagctattg	ttatctctgg	tgtgggactg	ttctctattg	1800
actttgaagg	ggtagaggaa	gcggaaagga	taactgacat	gacacctgaa	attgagtttg	1860
acgaggacga	cgaggaagag	gaagacattg	acatttagag	tgacaattat	gtaactttct	1920
aattacccta	tattgtttga	atatataatg	aaactattgt	gtgttaaagg	ttgtggggtt	1980
gattattaaa	tttaaattga	aacggtattg	acgatatt			2018

Figure 4: ISA1mta Amino Acid Sequence

1	11	21	31	41	51	
1	MADKGMTYSF	DVRDNTLVVR	RSTATKSGIK	ISYREDRGTS	LLQKAFAGTE	DEFWVELDQD 60
61	VYVDKKIRKF	LEEEKMKDMS	TRVSGAVAAA	IERSVEFDNF	SKEAAANIEM	AGVDDEEAGG 120
121	SGLVDNRRKN	KGVSNMAYNL	SLFIGMVFPA	LTTFFSAILS	EGEMSIWQNG	QAIIRILALA 180
181	DEDGKRQTRT	GGQRVDMADV	TKLNVVTANG	KVKQVEVNLN	DLKAAFRQSR	PKRSDYRKGQ 240
241	GSKATESSIS	NQCMALIMKS	VLSADQLFAP	GVKMMRTNGF	NASYTTLAEG	ANIPSKYLRH 300
301	MRNCGGVALD	LMGMKRIKNS	PEGAKSIFPS	IIQKKVRGRC	RTEEQRLLTS	ALKISDGENK 360
361	FORIMDTLCT	SFLIDPPRTT	KCFIPPISSL	MMYIQEGNSV	LAMDFMKNGE	DACKICREAK 420
421	LKVGVNSTFT	MSVARTCVAV	SMVATAFCSA	DIENAVPGS	ERYRSNIKAN	TTKPKKDSTY 480
481	TIQGLRLSNV	RYEARPETSQ	SNTDRSWQVN	VTDSFGGLAV	FNQGAIREML	GDGTSETTSV 540
541	NVRALVKRIL	KSASERSARA	VKTFMVGEQG	KSAIVISGVG	LFSIDFEGVE	EAERITDMTP 600
601	EIEFDEDEDE	EEDIDI				

Molecular weight: 68050.47

Theoretical pI: 8.20

Figure 5: ISA3mx Nucleotide Sequence

atgtctggat	ttaacctcga	ggtaatggtg	ccggaacaag	gaggaaaagt	ggtcttcagc	60
cttactgaaa	cggggtcagt	tgtctcgttt	tacggagatg	atgaaccagg	tgaagggtcc	120
tgcgaacttg	cctctgaaaa	catggatttt	ccaagttgtc	ctctggggaa	tggagatgac	180
ttctgtctgt	cgctggcgct	aagcacaatg	agatgggtctg	ggatgaccaa	gagaaacaac	240
ttcatggaca	gattcattgg	aagttttggt	cactgtacac	cagtgatgat	ctggtcgtat	300
ggaaatttgt	ccaagaaaag	ccatcacaaa	atggtttgcc	acacttgccc	agacgagtac	360
aagttcagt	acaaggacga	gatgcaggga	tactatgagg	gatgtctaga	ggcttctact	420
gacattttcc	ttgatgaact	tgctactggt	gttacagggtg	gcttctttcc	tgtcggactc	480
aaaggttcct	ggggaggatg	gtacctcaag	tacgtcaggt	atgctggacc	tcttgcgga	540
tcaagtggat	tcattgtcaa	tcaacgattc	tacgacagag	cccaaaacaa	gactggatcc	600
agggttgtat	ccatggttga	aatggacgga	gacggcttat	cgttcatcta	cgagaagcct	660
agcgtctacc	atagtgaagg	gtgcactggg	tcagcagcga	ggttctggaa	acgggatcac	720
aatgagagag	ctggagttga	gcttagggct	ggacttcact	tcagaatgtg	attggttgaa	780
aacttgttat	gtaacaaga	attttgtggt	tttgtcagaa	aaagaaattg	ctgtaaacat	840
ggaagttgaa	aaattcattt	gtaatgagaa	ctaaagatgt	ctttgtgttc	aaattttaac	900
taatgacaat	atatgaaata	tgtcgtacat	ggtgttgatg	ataattttta	aaacgaaaag	960
gagaattttt	actaaaataa	aaaaaaaaata	aaaaaaaaaa	aaaagaaaaa	aaaaaaaaaa	1020
aaaaaaagtc	gacatcgata	cgcgtggtca				1050

Figure 6a: Predicted Amino Acid Sequence of unspliced (M1) product of ISA3mx

MSGFNLEVMVPEQGGKVVFSLTETGSCVSFYGDDEPGEGSCELASENMDFPSCPLGNGDD 60
FCLSLALSTMRWSGMTKRNNFMDRFIGSFVHCTPVMIWSYGNLSKKSHHKMVCHTCPDEY 120
KFSDKDEMGGYYEGCLEASTDIFLDELATVVTGGFFPVGLKGSWGGWYLYVRYAGLAG 180
SSGFIVNQRFYDRAQNKTGSRVSMVEMDGDGLSFIYEKPSVYHSDGCTGSAARFWKRDH 240
NERAGVELRAGLHFRM 256

Molecular weight: 28,498

Theoretical pI: 5.38

Figure 6b: Predicted Amino Acid Sequence of spliced (M2) product of ISA3mx

MSGFNLEVMVPEQGGKVVFSLTETGSCVSFYGDDEPGGFFPVGLKGSWGGSYLKYYVRYAG 60
PLAGSSGFIVNQRFYDRAQNKTGSRVSMVEMDGDGLSFIYEKPSVYHSDGCTGSAARFW 120
KRDHNERAGVELRAGLHFRM 140

Molecular weight: 15,357

Theoretical pI: 6.82

Figure 6c: Predicted Amino Acid sequence of spliced (M3) product of ISA3mx

MNLLLLLQVASFLSDSKVPGEDGTSSTSGMLDLLRDQVDSLSINDSTTEPKTRLDPGLYP 60
WLKWTETAYRSSTRSLASTIVMGALGQQRGSGNGITMRELESLGLDFTSECDWLKTCYV 120
NKNFVFLSEKEIAVNMEVEKFICNEN 147

Molecular weight: 14,888

Theoretical pI: 4.65

Figure 7: ISA4ha Nucleotide Sequence

cagtcgtcta	tgtcttagaa	accatcctga	caccacctgg	ataggtgact	cccgaagcga	60
tcaatcaagg	gtgaaccaac	agtctcttga	tctgggttaca	aacttcaagg	gaattctaca	120
agccaagaac	gggaatggtc	tcatgaagca	gatgagcgga	aggttcccaa	gtgattggta	180
ccaacctact	acaaagtata	ggattctata	cattgggtaca	aacgactgca	ctgagggccc	240
taacgacgtg	atcataccga	cgtcaatgac	actagacaat	gtggcaaggg	acctgtacct	300
gggagcatgt	cgaggagatg	taagagtga	accaaccttc	gtgggagcag	ctgagcttgg	360
actgattggg	agaacagatg	ccttaacagg	atcttctgta	aagggtgctga	ctttcaacaa	420
ccctactatt	gtagtagttg	gactaaatgg	aatgtcagga	atctacaagg	tctgcattgc	480
tgcctcttct	ggaaacgtag	gcggagtcaa	cttgggtgaac	ggatgcggat	acttcagcgc	540
tcctctgaga	ttcgacaact	tcaaaggaca	gatctacgtg	tcagacacct	ttgaagtcag	600
aggaacaaaag	aacaaatgtg	tcatacttag	atcttctagc	aatgctcctt	tgtgtacaca	660
tatcaaaaaga	aacattgagt	tggatgagta	cgttgacaca	ccaaacactg	ggggcgtata	720
tccttctgat	gggtttgatt	ctcttcacgg	ctctgcttcg	attagaactt	ttttaacaga	780
ggcactgaca	tgtccaggtg	tagattggga	cagaattgat	gcagcttcat	gcgagtatga	840
cagttgtcct	aaacttgtga	aagaatttga	ccaaacaggg	ctcggaacaa	cagatactca	900
aataatgaga	gagctagaag	cacaaaagga	gatgattggg	aaacttggca	gaaacattac	960
agacgtaaac	aacagagtag	atgctattcc	accacagctt	agcaacatct	tcattcttat	1020
gggagtggca	ggt					1033

Figure 8: ISA4ha Amino Acid Sequence

	1	11	21	31	41	51			
1	SRLCLRNP	TD	TSR	QVNS	LD	LVTNFKGILQ	AKNGNGLMKQ	MSGRFPSDWY	60
61	QPTTKYRILY	IGTNDCTEGP	NDVVIPTSM	LDNVARDLYL	GACRGDVRVT	PTFVGAAELG			120
121	LIGRTDALTG	FSVKVLTFNN	PTIVVVG	LNG	MSGIYKVCIA	ASSGNVGGVN	LVNGCGYFSA		180
181	PLRFDNFKGQ	IYVSDTFEVR	GTKNKC	VILR	SSSNAPLCTH	IKRNIELDEY	VDTPNTGGVY		240
241	PSDGFDSLHG	SASIRTF	LTE	ALTC	PGVDWD	RIDAASCEYD	SCPCLVKEFD	QTGLGNTDTQ	300
301	IMRELEAQKE	MIGKLGRNIT	DVNNRVDAIP	PQLSNIFISM	GVAG				

Molecular Weight: 37,437

Theoretical pI: 5.38